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# 1 Alternating Feature Spaces in Relevance Feedback

Fang Qian, Mingjing Li, Hong-Jiang Zhang, Wei-Ying Ma, Bo Zhang

September 2003

Multimedia Tools and Applications, Volume 21 Issue 1

Full text available: Publisher Site

Additional Information: full citation, abstra

Image retrieval using relevance feedback can be treated as a two-classification process. The user-labelled relevant and irrelevant in positive and negative training samples, based on which a classifier is trained. Then the classifier in turn classifies all images in the database. In training samples is very small because the users are often impatient. positive samples usually are not representative ...

Keywords: complementary features, image retrieval, relevance feedback, training samples

## 2 The Nonlinear Statistics of High-Contrast Patches in Natural Images

Ann B. Lee, Kim S. Pedersen, David Mumford

August 2003

International Journal of Computer Vision, Volume 54 Issue 1-3

Full text available:  Publisher Site

Additional Information: full citation, abstract


Recently, there has been a great deal of interest in modeling the natural images. However, despite the many advances in the direct multi-resolution analysis, the full probability distribution of pixels has not yet been described. In this study, we explore the space of the values of  $3 \times 3$  high-contrast patches from optical and 3D range the distribution of data is extracted ...

Keywords: clutter, geometrically based statistics, high-dimension estimation, higher-order statistics, microimages, natural image scene coding, pixel-based image models

## 3 Multimedia information retrieval: Experimental result analysis for a generative model

Thijs Westerveld, Arjen P. de Vries

July 2003 Proceedings of the 26th annual international ACM SIGIR conference on Research in informaion retrieval

Full text available:  pdf(2.59 MB)

Additional Information: full citation, abstract, references, introduction

The main conclusion from the metrics-based evaluation of video retrieval system: non-interactive image retrieval from general collections using visual information is how a detailed analysis of retrieval results -- looking beyond mean average precision relevance -- gives significant insight in the main problems with the visual part of Such an analytical approach proves an important ...

Keywords: gaussian mixture models, multimedia retrieval, results analysis

## 4 Statistics: Extended wavelets for multiple measures

Antonios Deligiannakis, Nick Roussopoulos

June 2003 Proceedings of the 2003 ACM SIGMOD international conference on on M

Full text available:  pdf(322.18 KB)

Additional Information: full citation, abstract, references

While work in recent years has demonstrated that wavelets can be efficiently used on data and provide fast and fairly accurate answers to queries, little emphasis has been placed on approximating datasets containing multiple measures. Existing decomposition approaches treat each measure individually, or treat all measures as a vector of values and process this paper that the resulting *individual*

5 Session 8: miscellaneous topics: An evaluation of methods for linking 3D vi

Matthew Plumlee, Colin Ware

April 2003 Proceedings of the 2003 symposium on Interactive 3D graphics

Full text available:  pdf(3.73 MB)

Additional Information: full citation, abstra

It is common for 3D visualization systems to provide multiple points of view to a solutions to the problem of linking these views so that users can understand the : Toward developing guidelines for view-linking devices, we have carried out two e of three different classes of linking devices: a directional proxy, tethers from one map coupling. The task we apply them ...

Keywords: frames of reference, interaction design, multi-perspective identificatio

6 Session 1: bodies: An automatic modeling of human bodies from sizing par

Hyewon Seo, Nadia Magnenat-Thalmann

April 2003 Proceedings of the 2003 symposium on Interactive 3D graphics

Full text available:  pdf(3.39 MB)

Additional Information: full citation, abstract

In this paper, we present an automatic, runtime modeler for modeling realistic, a can generate a new model or modify an existing one simply by inputting a number approach the problem by forming deformation functions that are devoted to the ( and proportion of the body geometry by taking the parameters as input. Starting data of human body models as examples, we derive these functions b ...

Keywords: 3D scan data, PCA, examples, human body modeling, interpolation, si

7 Image-based reconstruction of spatial appearance and geometric detail

Hendrik P. A. Lensch, Jan Kautz, Michael Goesele, Wolfgang Heidrich, Hans-Peter S

April 2003 ACM Transactions on Graphics (TOG), Volume 22 Issue 2

Full text available:  pdf(302.22 KB)

Additional Information: full citation, abstract, references, ii

Real-world objects are usually composed of a number of different materials that within a single material. Photorealistic rendering of such objects requires accurate properties of each material, as well as the spatially varying effects. We present a that robustly detects the different materials of real objects and fits an average bi function (BRDF) to each of them. In or ...

Keywords: BRDF measurement, normal map acquisition, photometric stereo, sha BRDFs

8 Region proximity in metric spaces and its use for approximate similarity search

Giuseppe Amato, Fausto Rabitti, Pasquale Savino, Pavel Zezula

April 2003 ACM Transactions on Information Systems (TOIS), Volume 21 Issue

Full text available:  pdf(1.01 MB)

Additional Information: full citation, abstract, references, and

Similarity search structures for metric data typically bound object partitions by bounding box overlap, a relevant issue is to estimate the proximity of regions in order to predict regions' intersection. This paper analyzes the problem using a probabilistic approach that effectively computes the proximity through realistic heuristics that only require small-scale simulation to validate the results.

Keywords: Approximation algorithms, approximate similarity search, metric data, evaluation

9 A hierarchical access control model for video database systems

Elisa Bertino, Jianping Fan, Elena Ferrari, Mohand-Said Hacid, Ahmed K. Elmagarm

April 2003 ACM Transactions on Information Systems (TOIS), Volume 21 Issue

Full text available:  pdf(6.27 MB)

Additional Information: full citation, abstract, references, and

Content-based video database access control is becoming very important, but it raises the following related research issues: (a) efficient video analysis for supporting semantic search; (b) effective video database indexing structure; (c) the development of suitable access control models tailored to the characteristics of video data. This paper presents a novel approach to support multilevel access control.

Keywords: Video database models, access control, indexing schemes

10 Satellite Image Deblurring Using Complex Wavelet Packets

André Jalobeanu, Laure Blanc-Féraud, Josiane Zerubia

March 2003 International Journal of Computer Vision, Volume 51 Issue 3

Full text available:  Publisher Site

Additional Information: full citation, abstract, references, and

The deconvolution of blurred and noisy satellite images is an ill-posed problem. Direct inversion leads to unacceptable noise amplification. Usually, during the inversion process. Recently, new approaches have been proposed. Rough deconvolution is followed by noise filtering in the wavelet transform domain. We have developed this second solution, by thresholding the coefficients of the wavelet packet transform; all the parameters are estimated using Bayesian estimation.

Keywords: Bayesian estimation, complex wavelet packets, deblurred satellite images

## 11 Experiments in social data mining: The TopicShop system

Brian Amento, Loren Terveen, Will Hill, Deborah Hix, Robert Schulman

March 2003 ACM Transactions on Computer-Human Interaction (TOCHI), Volume

Full text available:  pdf(377.92 KB)

Additional Information: full citation, abstract, references, i

*Social data mining systems* enable people to share opinions and benefit from each other by mining and redistributing information from computational records of social activity, system usage history, citations, or hyperlinks. Some general questions for evaluation are (1) is the extracted information valuable? and (2) do interfaces based on the information improve user reports? This report here on *TopicShop*, a system ...

Keywords: Cocitation analysis, collaborative filtering, computer-supported cooperative work, visualization, social filtering, social network analysis

## 12 Mini-buckets: A general scheme for bounded inference

Rina Dechter, Irina Rish

March 2003 Journal of the ACM (JACM), Volume 50 Issue 2

Full text available:  pdf(902.27 KB)

Additional Information: full citation, abstract, references, i

This article presents a class of approximation algorithms that extend the idea of bucket elimination, inspired by successful constraint propagation algorithms, to probabilistic inference. The idea is to bound the dimensionality of dependencies created by inference algorithms using a parameterized scheme, called *mini-buckets*, that offers adjustable trade-off between accuracy and complexity. The mini-bucket approach to optimization problems, such as ...

Keywords: Accuracy/complexity trade-off, Bayesian networks, approximation algorithms, optimization, probabilistic inference.

## 13 Interaction and VR: A wide field, high dynamic range, stereographic viewer

Patrick Ledda, Greg Ward, Alan Chalmers

February 2003 Proceedings of the 1st international conference on Computer graphics Australasia and South East Asia

Full text available:  pdf(5.58 MB)

Additional Information: full citation, abstract, references, inc

In this paper we present a High Dynamic Range viewer based on the 120-degree Extra Perspective) stereo optics used in the original NASA virtual reality systems. Using an intense backlighting system ( $20 \text{ Kcd/m}^2$ ) and layered transparencies, we are able to reproduce luminance levels and full dynamic range of almost any visual environment. This is a new type of display environments with luminance levels ...

Keywords: dynamic range, tone reproduction

#### 14 Understanding the Behavior of SFM Algorithms: A Geometric Approach

Tao Xiang, Loong-Fah Cheong

February 2003

International Journal of Computer Vision, Volume 51 Issue 2

Full text available:  Publisher Site

Additional Information: full citation, abstract, index t


We put forth in this paper a geometrically motivated motion error of supporting investigation of global effect such as inherent ambiguity with the usual statistical kinds of motion error analyses which can be such as noise perturbations, and where much of the results remain empirical in nature. The error expression that we derive allows us to identify conditions likely to cause ambiguity ...

Keywords: depth distortion, epipolar constraint, error analysis, inference from motion

#### 15 A search engine for 3D models

Thomas Funkhouser, Patrick Min, Michael Kazhdan, Joyce Chen, Alex Halderman, et al.  
January 2003

ACM Transactions on Graphics (TOG), Volume 22 Issue 1

Full text available:  pdf(7.91 MB)

Additional Information: full citation, abstract, references, index

As the number of 3D models available on the Web grows, there is an increasing number of people find them. Unfortunately, traditional text-based search techniques are not sufficient. In this article, we investigate new shape-based search methods. The key challenges are to make the search simple enough for novice users and matching algorithms robust enough to work in the wild. We present a Web-based search engine system that supports ...

Keywords: Search engine, shape matching, shape representation, shape retrieval



## 16 A Wide-Band Approach to the Absolute Phase Retrieval in SAR Interferometry

N. Veneziani, F. Bovenga, A. Refice

January 2003

Multidimensional Systems and Signal Processing, Volume 14 Issue

Full text available:  Publisher Site

Additional Information: full citation, abstract

Because of possible multiple solutions allowed, the unwrapping of phase patterns in the spatial domain is an ill-posed problem which needs knowledge of the ground morphology for the solution of ambiguities. This is the case of interferometric SAR (Synthetic Aperture Radar) data. In this paper, a new approach to InSAR processing for retrieving the height of ground features is presented. Each other, unlike most conventional phase unwrapping methods, this approach does not require

Keywords: SAR interferometry, phase unwrapping, sub-band focusing

## 17 On Advances in Statistical Modeling of Natural Images

A. Srivastava, A. B. Lee, E. P. Simoncelli, S.-C. Zhu

January 2003

Journal of Mathematical Imaging and Vision, Volume 18 Issue 1

Full text available:  Publisher Site

Additional Information: full citation, abstract

Statistical analysis of images reveals two interesting properties: (i) non-Gaussian statistics to scaling of images, and (ii) non-Gaussian behavior of image features such as kurtosis, heavy tails, and sharp central cusps. In this paper we review recent statistical modeling of natural images that attempt to explain the observed properties. The results are considered: (i) studies of probability models of image features decompositions (such as Fourier or wavelet ...

Keywords: Bessel K form, generalized Laplacian, image manifold, non-Gaussian models, scale invariance, statistical image analysis

## 18 A survey on wavelet applications in data mining

Tao Li, Qi Li, Shenghuo Zhu, Mitsunori Ogihara

December 2002

ACM SIGKDD Explorations Newsletter, Volume 4 Issue 2

Full text available:  pdf(330.06 KB)

Additional Information: full citation, abstract, references

Recently there has been significant development in the use of wavelet methods in data mining. However, there has been written no comprehensive survey available on the topic. This paper fills this void. First, the paper presents a high-level data-mining framework that reduces the data mining process to three components. Then applications of wavelets for each component are reviewed. The impact of wavelets on data mining research and future research directions are discussed.

## 19 Clustering algorithms: Alternatives to the k-means algorithm that find better

Greg Hamerly, Charles Elkan

November 2002 Proceedings of the eleventh international conference on Information

Full text available:  pdf(1.32 MB)

Additional Information: full citation, abstract, references, inc

We investigate here the behavior of the standard k-means clustering algorithm a k-harmonic means algorithm due to Zhang and colleagues, fuzzy k-means, Gauss two new variants of k-harmonic means. Our aim is to find which aspects of these good clusterings, as opposed to converging to a low-quality local optimum. We d framework that introduces separate cluster membe ...

Keywords: clustering quality, k-harmonic means, k-means, unsupervised classific

## 20 Image similarity search systems: Symbolic photograph content-based retrie

Philippe Mulhem, Joo Hwee Lim

November 2002 Proceedings of the eleventh international conference on Information

Full text available:  pdf(835.04 KB)

Additional Information: full citation, abstract, references, i

Photograph retrieval systems face the difficulty to deal with the different ways to We consider and demonstrate here the use of multiple index representations of p retrieval. The use of multiple indexes allows integration of the complementary str retrieval models. The proposed representation supports multiple labels for region inferences and relationships. We define links ...

Keywords: fusion/combination, image access

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